

Study Guide

For use with pages 119–124

GOAL Solve two-step equations.**EXAMPLE 1** Using Subtraction and Division to SolveSolve $14x + 12 = 54$. Check your solution.

$$14x + 12 = 54$$

Write original equation.

$$14x + 12 - 12 = 54 - 12$$

Subtract 12 from each side.

$$14x = 42$$

Simplify.

$$\frac{14x}{14} = \frac{42}{14}$$

Divide each side by 14.

$$x = 3$$

Simplify.

Answer: The solution is 3.

✓ Check $14x + 12 = 54$

Write original equation.

$$14(3) + 12 \stackrel{?}{=} 54$$

Substitute 3 for x .

$$54 = 54 \checkmark$$

Solution checks.

Exercises for Example 1**Solve the equation. Check your solution.**

1. $12x + 15 = 75$ 2. $13n + 3 = 81$ 3. $5z + 20 = 95$ 4. $5x + 11 = 111$

EXAMPLE 2 Using Addition and Multiplication to SolveSolve $\frac{x}{6} - 8 = 6$.

$$\frac{x}{6} - 8 = 6$$

Write original equation.

$$\frac{x}{6} - 8 + 8 = 6 + 8$$

Add 8 to each side.

$$\frac{x}{6} = 14$$

Simplify.

$$6\left(\frac{x}{6}\right) = 6(14)$$

Multiply each side by 6.

$$x = 84$$

Simplify.

Answer: The solution is 84.

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Exercises for Example 2

Solve the equation. Check your solution.

5. $\frac{y}{10} - 13 = -27$

6. $\frac{m}{7} - 8 = 1$

7. $\frac{g}{12} - 5 = 3$

8. $\frac{r}{2} - 5 = 40$

EXAMPLE 3 Solving an Equation with Negative CoefficientsSolve $10 - \frac{n}{5} = -3$. Check your solution.

$$10 - \frac{n}{5} = -3$$

Write original equation.

$$10 - \frac{n}{5} - 10 = -3 - 10$$

Subtract 10 from each side.

$$-\frac{n}{5} = -13$$

Simplify.

$$\frac{n}{-5} = -13$$

Rewrite $-\frac{n}{5}$ as $\frac{n}{-5}$.

$$-5\left(\frac{n}{-5}\right) = -5(-13)$$

Multiply each side by -5 .

$$n = 65$$

Simplify.

Answer: The solution is 65.

✓ **Check** $10 - \frac{n}{5} = -3$

Write original equation.

$$10 - \frac{65}{5} \stackrel{?}{=} -3$$

Substitute 65 for n .

$$-3 = -3 \checkmark$$

Solution checks.

Exercises for Example 3

Solve the equation. Check your solution.

9. $10 - 15y = 55$

10. $11 - 9n = -16$

11. $21 - \frac{x}{2} = 7$

12. $2 - \frac{p}{11} = 11$